SYLVANIA ECG semiconductors

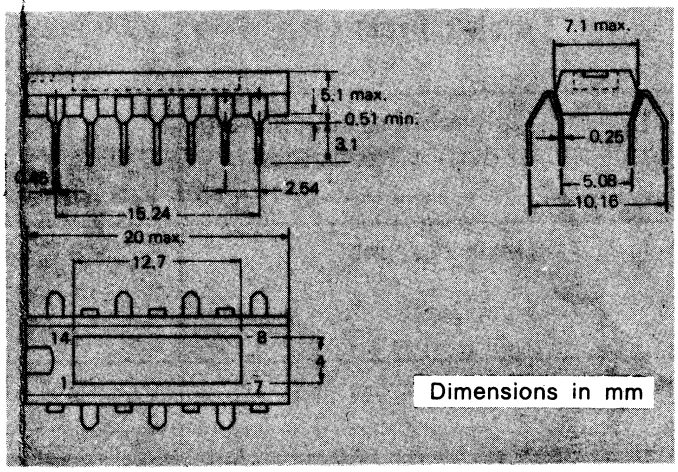
ECG1113

AUDIO AMPLIFIER

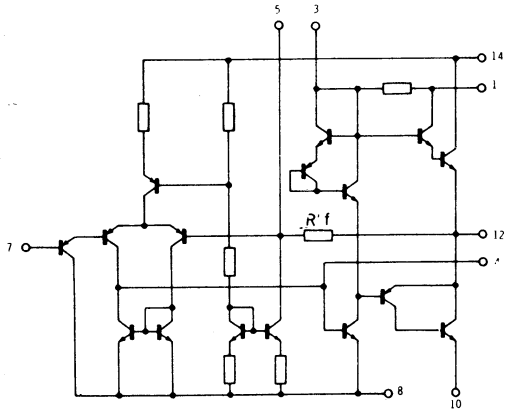
- OUTPUT POWER 2.1 W (12 V - 8 Ω)
- LOW DISTORTION
- LOW QUIESCENT CURRENT
- HIGH INPUT IMPEDANCE

The ECG1113 is a monolithic integrated circuit in a 14-lead quad in-line plastic package.

It is particularly designed for use in radio receivers and record-players as audio amplifier. The usable range of supply voltage varies from 6 V to 15 V and the circuit requires a minimum number of external components.

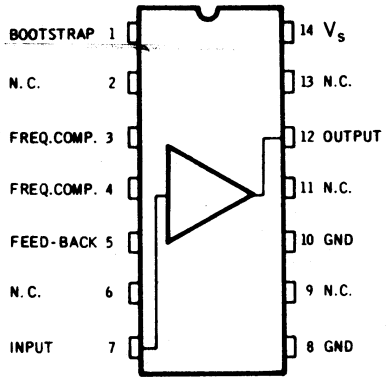


SCHEMATIC DIAGRAM



CONNECTION DIAGRAM

(top view)



ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage	15	V
V_i*	Input voltage	-0.5 to 15	V
I_o	Output peak current	1	A
P_{tot}	Power dissipation at $T_{amb} \leq 25$ °C	1.35	W
T_{stg}	Storage temperature	-55 to 125	°C
T_j	Junction temperature	150	°C

* For $V_s < 15$ V, $V_{i\,max} = V_s$

THERMAL DATA

$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	93	°C/W

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ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
V_o	Quiescent output voltage	V_s = 9 V		4.8		V
		V_s = 12 V		6.3		V
I_d	Total quiescent drain current	V_s = 9 V		3		mA
		V_s = 12 V		3.5		mA
I_d	Quiescent drain current of output transistors	V_s = 9 V		1		mA
		V_s = 12 V		1.2		mA
I_d	Drain current	R_L = 8 Ω				
		P_o = 1.15 W V_s = 9 V		170		mA
		P_o = 2.1 W V_s = 12 V		235		mA
I_b	Input bias current	V_s = 9 V		60		nA
		V_s = 12 V		75		nA
P_o	Output power	d = 2% R_L = 8 Ω				
		V_s = 9 V		0.9		W
		V_s = 12 V		1.7		W
		d = 10% R_L = 8 Ω				
		V_s = 9 V		1.15		W
		V_s = 12 V	1.5	2.1		W
R_f'	Internal feedback resistance (see schematic diagram)			7.5		kΩ
Z_i	Input impedance	open loop		0.75		MΩ
d	Distortion	Test circuit 1				
		R_L = 8 Ω f = 1 kHz				
		P_o = 50 mW V_s = 9 V		0.4		%
		P_o = 50 mW V_s = 12 V		0.3		%
		P_o = 0.5 W V_s = 9 V		0.3		%
		P_o = 1 W V_s = 12 V		0.2		%
		Test circuit 2				
		R_L = 8 Ω f = 1 kHz				
		P_o = 50 mW V_s = 9 V		1.7		%
		P_o = 50 mW V_s = 12 V		1.5		%
		P_o = 0.5 W V_s = 9 V		1.2		%
		P_o = 1 W V_s = 12 V		1		%
G_v	Voltage gain (open loop)	R_L = 8 Ω V_s = 9 V		68		dB
		R_L = 8 Ω V_s = 12 V		70		dB

Fig. 1 - Typical output power vs load resistance

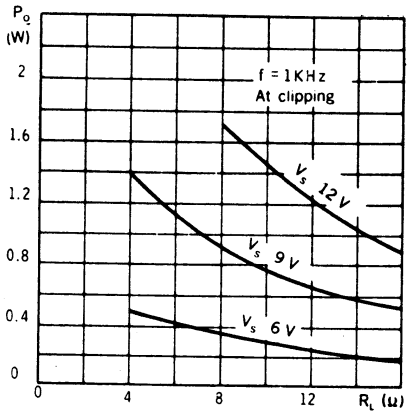


Fig. 2 - Typical output power vs load resistance

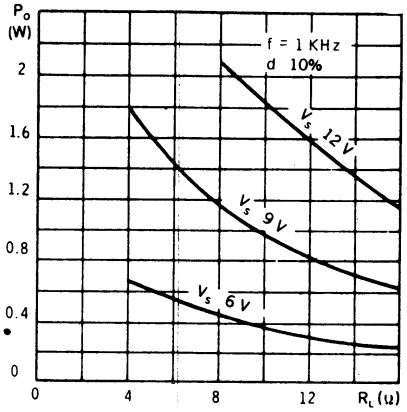


Fig. 3 - Typical distortion vs output power

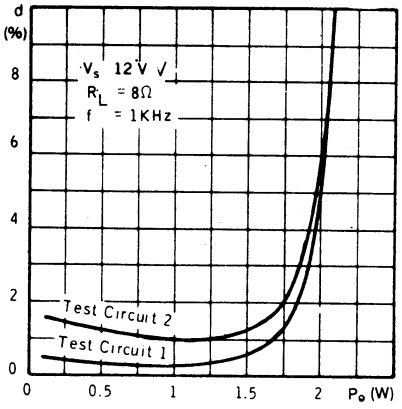


Fig. 4 - Typical distortion vs output power

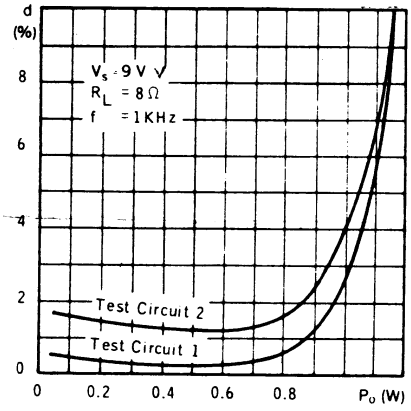


Fig 5' - Typical voltage gain (open loop) vs frequency

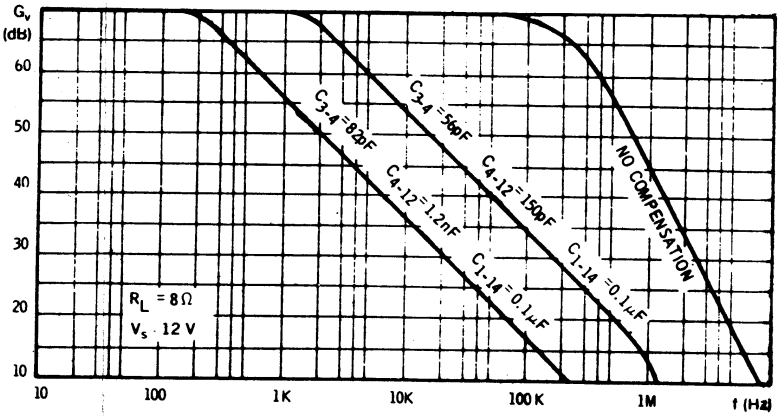


Fig. 6 - Typical relative frequency response

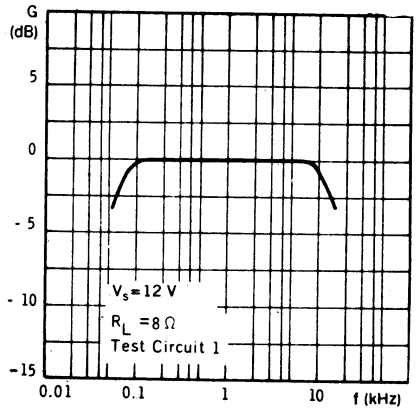


Fig. 7 - Typical relative frequency response

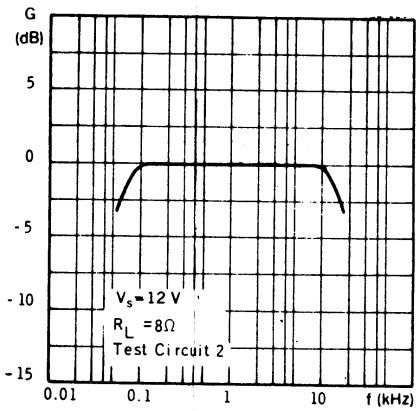


Fig. 8 - Typical output power vs input voltage

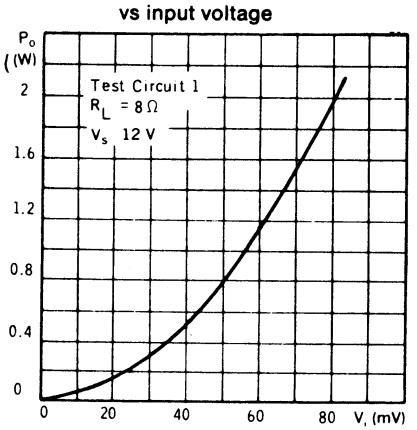


Fig. 9 - Typical output power vs input voltage

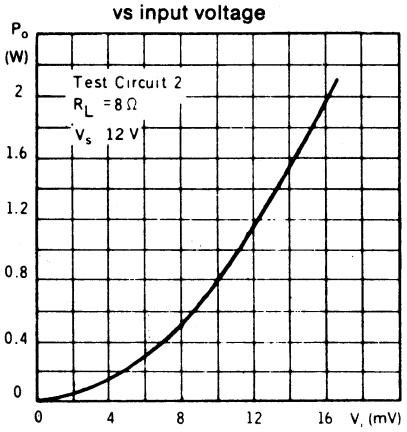


Fig. 10 - Typical power dissipation and efficiency vs output power

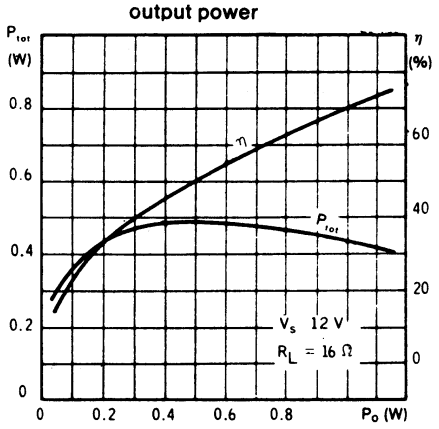


Fig. 11 - Typical power dissipation and efficiency vs output power

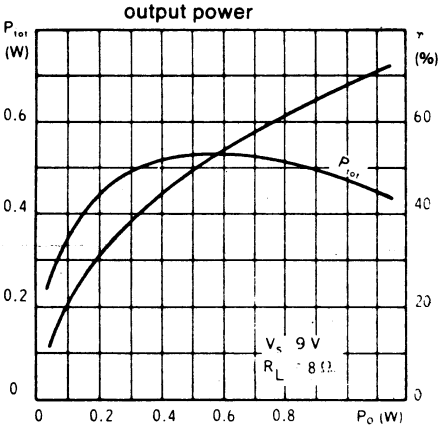


Fig. 12 - Typical power dissipation and efficiency vs output power

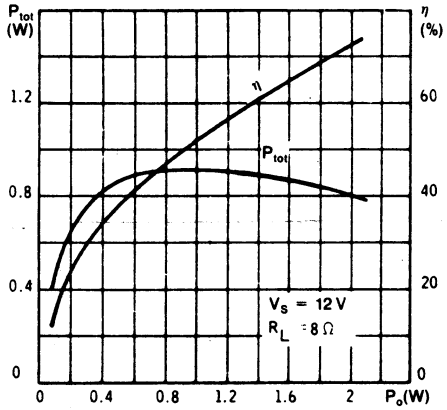


Fig. 13 - Typical drain current vs output power

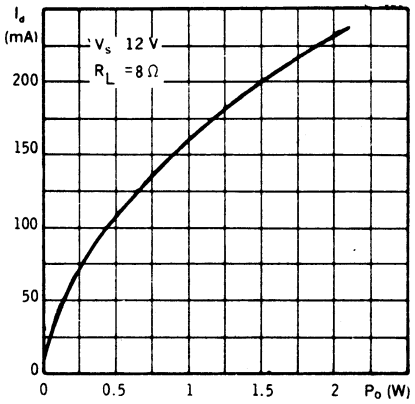


Fig. 14 - Maximum power dissipation vs load resistance

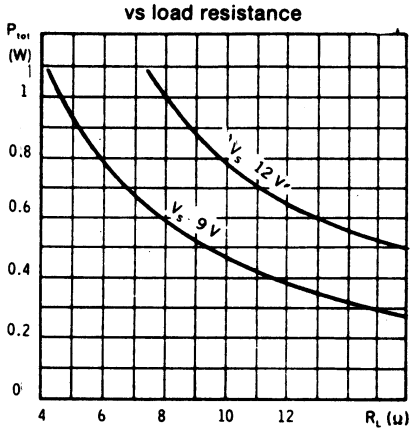


Fig. 15 - Power rating chart

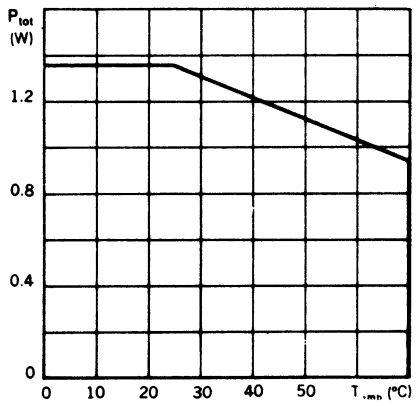


Fig. 16 - Typical quiescent drain current vs supply voltage

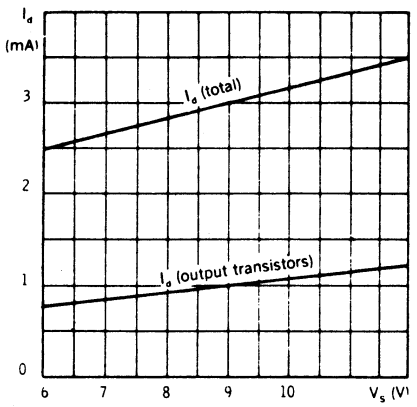


Fig. 17 - Typical quiescent drain current vs ambient temperature

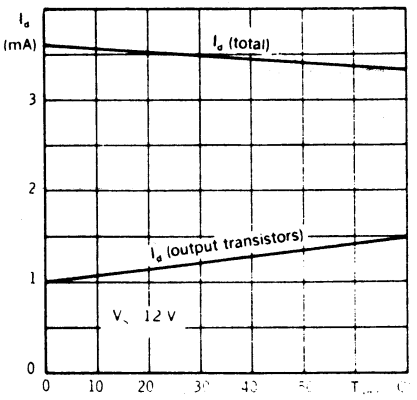
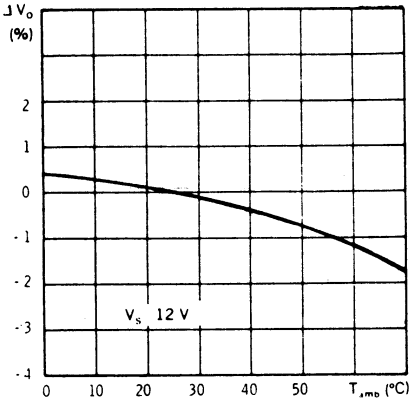
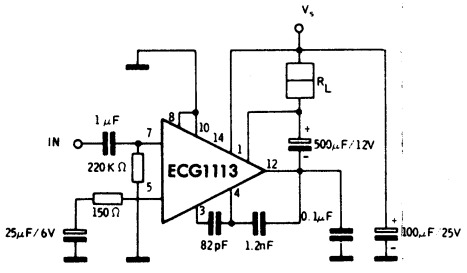


Fig. 18 - Quiescent output voltage variation vs ambient temperature

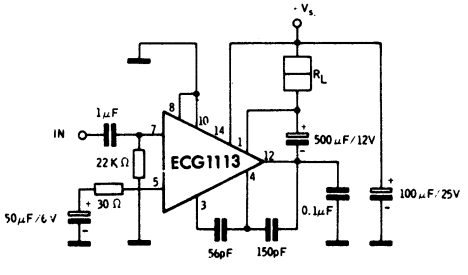


TEST CIRCUITS

Circuit No. 1 (G_v = 50)



Circuit No. 2 (G_v = 250)



TYPICAL APPLICATIONS

Fig. 19 - Audio amplifier for radio.

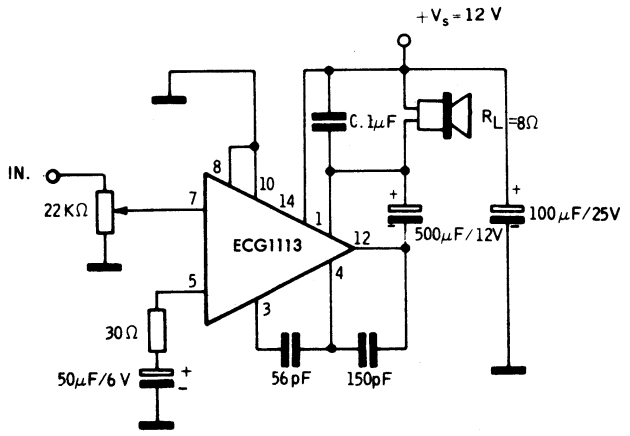
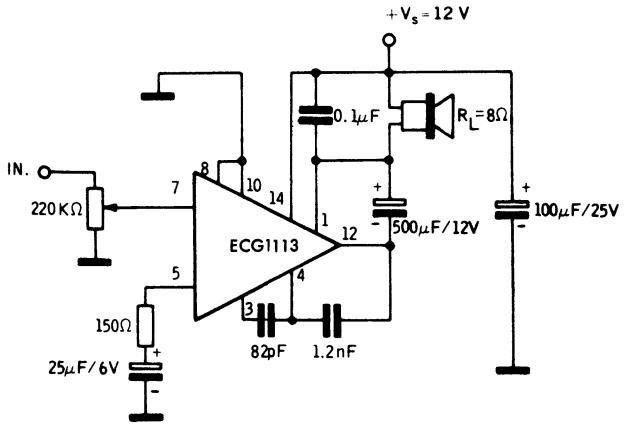


Fig. 20 - Audio amplifier for record-player.



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